IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Miyanaga et al.
For: Process for producing polyether
Serial No.: 10/082 059 Group: 1711
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The Commissioner of Patents and Trademarks
Washington, D.C. 20231

DECLARATION UNDER 37 CFR 1.132

I, Seiichi MIYANAGA, declare as follows:

I am one of the co-inventors of the invention as claimed and described in the instant patent application. I have carried out additional tests, procedures and results of which are described below.

Comparative Example A-1

Stearyl glycidyl ether was polymerized in the same way as shown in Example 1 of the instant patent application except that Catalyst A was replaced by 1 mL of a catalyst solution including 0.9296 g of samarium triisopropoxide dissolved in 28.89 g of benzene. It was results that no solid matter was

obtained after re-crystallization and the yield was zero.

Comparative Example A-2

Stearyl glycidyl ether was polymerized in the same way as shown in Example 1 of the instant patent application except that Catalyst A was replaced by 1 mL of a catalyst solution including 0.5192 g of samarium tris(tetramethylheptanedionate dissolved in 7.42 g of benzene. It was results that no solid matter was obtained after re-crystallization and the yield was zero.

Comparative Example A-3

Lauryl glycidyl ether was polymerized in the same way as shown in Example 4 of the instant patent application except that Catalyst B was replaced by 1 mL of a catalyst solution including a mixture of triisobutylaluminium, phosphoric acid and tris(diethylamino)phosphine at the mixing molar ratio of 3/1/0.1, dissolved in toluene, having the aluminium concentration of 0.1 M. It was results that the yield was 37% and the product had Mn=4500, Mw=70,000 and C=18.5.

Comparative Example A-4

Methyl glycidyl ether was polymerized in the same way as shown in Example 5 of the instant patent application except that Catalyst C was replaced by 1 mL of a catalyst solution including a mixture of triisobutylaluminium, phosphoric acid and tris(diethylamino)phosphine at the mixing molar ratio of 3/1/0.1, dissolved in toluene, having the aluminium concentration of 0.1 M. It was results that the yield was 62% and the product had Mn=9000, Mw=210,000 and C=102.

Comparative Example A-5

3-(1H,1H,5H-octafluloropentyloxy)-1,2-epoxypropane was polymerized in the same way as shown in Example 6 of the

instant patent application except that no samarium tris(tetramethylheptanedionate was used. It was results that the yield was zero, the polymerization mixture being found to turn black.

Comparative Example A-6

3-(1H,1H,2H,2H-heptadecafluorodecyloxy)-1,2-epoxypropane was polymerized in the same way as shown in Example 8 of the instant patent application except that Catalyst D was replaced by 1 mL of a catalyst solution including 0.1 M of a mixture of triethylaluminium, water and acetylacetone at the mixing molar ratio of 1/0.5/1, dissolved in toluene. It was results that the yield was zero, the polymerization mixture being found to turn black.

It is noted from the test results that Comparative Example A-1 and A-2 show no polymerization with only a rare earth metal compound including for example samarium, using no reducing agent. In Comparative Example A-3 and A-4, polyether having a high polymerization degree cannot be obtained with an organic aluminium catalyst, which is effectively used in conventional polymerization of ethylene oxide or propylene oxide. Comparative Example A-5 and A-6 show no polymerization of a fluorinated epoxypropane with an organic aluminium catalyst.

I hereby declare that all statements made herein of any own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United State Code, and that such willful false statements may jeopardize the validity of the application or any patent issued

thereon.

Dated: 3/31/2003

Seiichi Miyanaga

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